

REMARKS

Claims 1, 2, 4, 6-10, 12-22, 24-39, 41, and 42 are pending in the present application.

The rejection of Claims 1, 2, 4, 6-22, and 24-42 under 35 U.S.C. §103(a) over Dreher et al (US 6,716,922B1) is respectfully traversed.

Dreher et al disclose a heat-curable polymeric binder in powder form, comprising from 87.5 to 12.5% by weight, based on the overall weight of the polymeric binder, of at least one water-insoluble polymer A1, from 12.5 to 87.5% by weight, based on the overall weight of the polymeric binder, of at least one water-soluble polymer A2 composed of from 50 to 100% by weight, based on the polymer A2, of at least one ethylenically unsaturated mono- and/or dicarboxylic acid, from 0 to 50% by weight, based on the polymer A2, of at least one ethylenically unsaturated compound E selected from the esters of ethylenically unsaturated monocarboxylic acids and the monoesters and diesters of ethylenically unsaturated dicarboxylic acids with an amine containing at least one hydroxyl group, up to 20% by weight, based on the polymer A2, of one or more further monomers, and from 0 to 30% by weight, based on the overall weight of the polymeric binder, of at least one amine containing a hydroxyl group, said polymeric binder containing from 0.1 to 30% by weight of said amine containing at least one hydroxyl group, in the form of the compound E and/or as a separate component. (column 3, lines 10 to 37).

The polymer A1 is a free-radical emulsion polymer (column 3, lines 51, 52). It is in general synthesized from 80 to 100 % by weight of at least one ethylenically unsaturated principle monomer, and from 0 to 20 % by weight of at least one ethylenically unsaturated comonomer (column 3, lines 55 to 62). The principle monomers may be linear or branched 1-olefins (column 4, line 17) or styrene (column 4, line 44). The

comonomers may be anhydrides, for example maleic anhydrides (column 4, lines 52 to 54). Several further suitable comonomers are disclosed by Dreher et al.

According to the examples in Dreher et al., the polymer A1 is preferably a copolymer of 2-ethylhexyl acrylate and 2-hydroxyethyl acrylate (example 1b on column 27, line 50), a copolymer of styrene, methylmethacrylate, and 2-hydroxyethyl acrylate (example 4b on column 28, lines 52-53), or a copolymer of 2-ethylhexyl acrylate, methylmethacrylate, and 2-hydroxyethylacrylate (example 6b, column 29, lines 31-32).

Component A2 in the polymeric binder according to Dreher et al. may comprise at least one ethylenically unsaturated component E which may be in one embodiment prepared by reaction of a dicarboxylic anhydride and a hydroxyl containing amine (column 8, lines 42 to 44). The polymer A2 is further composed of at least one ethylenically unsaturated mono- or dicarboxylic acid. Suitable acids are disclosed in columns 7 and 8 of Dreher et al.

According to the examples in Dreher et al., polymer A2 is preferably a carboxyl containing polymer of maleic anhydride, acrylic acid and an ethoxylated oleyl amine (example 1a, column 27, lines 26-33; example 4a, column 28, lines 27-33; and example 6a, column 29, lines 5-12).

In contrast, the presently claimed invention as set forth in amended Claims 1 and 8 relate to very specific pulverulent formaldehyde-free binder compositions consisting of components A, B, optionally further additive materials and optionally at least one crosslinking catalyst (see Claims 1 and 8).

Component A according to Claim 1 is a pulverulent copolymer polymerized from maleic anhydride and at least one  $\alpha$ -olefin, component A' according to Claim 8 is a pulverulent copolymer of maleic anhydride, at least one  $\alpha$ -olefin and styrene. Component B

according to claim 1, as well as according to Claim 8, is a very specific crosslinking agent selected from the group consisting of trimethylolpropane, 1,6-hexanediol, pentaerithniol, neopentylglycol, L-lysine, sorbitol, polyvinyl alcohol and bisdiethanol amide of adipic acid.

Thus, the binder compositions in presently pending Claims 1 and 8 differ from the compositions according to Dreher et al in the feature that the binder compositions according to the present invention contain only one copolymer (component A), which is a specific copolymer made from maleic anhydride and at least one  $\alpha$ -olefin (component A as claimed in Claim 1) or a copolymer prepared from maleic anhydride, at least one  $\alpha$ -olefin and styrene (component A' as claimed in Claim 8).

In contrast thereto the compositions according to Dreher et al comprise two different polymers, at least one water-insoluble polymer A1 and at least one water-soluble polymer A2 (column 3, lines 12 to 17). According to all the Examples in Dreher et al, the at least one water-insoluble polymer A1 is an acrylate copolymer and the at least one water-soluble polymer A2 is a copolymer prepared by polymerization of maleic anhydride and acrylic acid in the presence of ethoxylated oleyl amine.

Notably, the specific copolymer polymerized from maleic anhydride with at least one  $\alpha$ -olefin as claimed as component A in Claim 1 or polymerized from maleic anhydride, at least one  $\alpha$ -olefin and styrene as claimed as component A' in Claim 8 is not mentioned in Dreher et al.

According to the specification of Dreher et al, several different monomers are disclosed as the water-insoluble polymer A1. However, as stated above, the only specific examples concerning polymer A1 relate to acrylic copolymers A1 (column 3, line 51 to column 5, line 63).

The water-soluble polymer A2 is a reaction product of a dicarboxylic anhydride,

preferably maleic anhydride as mentioned in the examples. In addition to the at least one dicarboxylic anhydride the polymer A2 may also contain in copolymerized form other monomers, wherein the high number of monomers mentioned concerning the polymer A1 may be used (column 8, lines 42-51). However, the only specific examples concerning polymers A2 prepared from maleic anhydride and acrylic acid. Further, polymer A2 comprises, according to the examples, a compound E which is an ethoxylated oleyl amine.

Therefore, the specific copolymers polymerized from maleic anhydride and at least one  $\alpha$ -olefin as component A in Claim 1 or polymerized from maleic anhydride, at least one  $\alpha$ -olefin and styrene as component A' as claimed in Claim 8 are also not mentioned as polymer A2 in Dreher et al.

Accordingly, the binder composition of the presently claimed invention (i.e., Claims 1 and 8) not only differs from the compositions according to Dreher et al in that only one copolymer is used instead of two copolymers, but also that a specific copolymer A or A' is used, which are not specifically disclosed in Dreher et al. Yet another feature of the binder compositions according to Claims 1 and 8 of the present application that is different from the binder compositions disclosed by Dreher et al is the use of at least one specific pulverulent cross-linker. The cross-linkers of pending Claims 1 and 8 are not disclosed or suggested in Dreher et al.

The Examiner alleges that the cross-linkers mentioned in amended Claims 1 and 8 are known in the art for crosslinking maleic anhydride copolymers. However, the Examiner has not presented any prior art to support this position. When an Examiner maintains that there is an implicit teaching or suggestion in the prior art, "the Examiner should indicate where (page and line or figure) such a teaching or suggestion appears in the prior art." *Ex parte Jones*, 62

USPQ2d 1206, 1208 (Bd. Pat. App. & Inter. 2001) (**copy enclosed**). Therefore, the Office has not met the burden necessary to establish a *prima facie* case of obviousness.

As stated in the response filed December 19, 2006, it is the inventors of the present application that discovered that binder compositions derived from readily available components are very useful binders for fibrous and/or granular substrates. It is not necessary according to the present invention to prepare complicated polymers as polymer A2 in Dreher et al, which comprise component E or to use very specific unusual crosslinkers as the amine containing at least one hydroxyl group according to Dreher et al to obtain suitable binder compositions.

The binder compositions according to Dreher et al are therefore completely different from the binder compositions as claimed in the present invention. Moreover, there is no disclosure or suggestion in Dreher et al that the specific binder compositions according to the present invention composed of readily available materials are suitable for obtaining products having high mechanical strength and dimensional stability, even under humid conditions. Further, binder compositions according to the present invention exhibit excellent tack under anhydrous application conditions (page 9, line 5 to 9). These advantages of the pulverulent binder compositions of the present invention are demonstrated in Examples 1 to 3 of the present application (page 11, line 5 to page 12, line 7). There is no disclosure or suggestion in Dreher et al of binder compositions exhibiting this excellent tack under anhydrous application conditions. Therefore, Dreher et al fails to meet the threshold for establishing a *prima facie* case of obviousness and, even if the Examiner were to contend that this threshold was met, the Experimental data set forth in the specification would be sufficient to rebut the same.

Accordingly, Applicants request withdrawal of this rejection.

Applicants submit that the present application is now in condition for allowance.

Early notice to this effect is earnestly solicited.

Respectfully submitted,

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